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ABSTRACT

The National Foundation for Educational Research (NFER) information services are described and examined from the viewpoints of "networks and networking"; the genesis, growth and functions of "Information Analysis Centres"; the "invisible college"; and the "gatekeeper" concept. Within the description, a distinction is made between the activities of the Information Division and the total information services of the Foundation. The Information Division provides core information services, but the examination of NFER's role in the dissemination of information is not restricted to this division's work, as it is held that a major activity of the Foundation and its publishing arm is the dissemination of information. It is concluded that these developments and concepts have firmly established themselves within the overall information services of the NFER. (Author/AP)

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INFORMATION SERVICES

Jim Davies

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NATIONAL FOUNDATION FOR EDUCATIONAL RESEARCH IN ENGLAND AND WALES

AUTHOR'S ABSTRACT INFORMATION SERVICES

The NFER's Information Services are described and examined from the viewpoints of "networks and networking", the genesis, growth and functions of "Information Analysis Centres", the"invisible college" and the "gatekeeper" concept.

A distinction is made between the activities of the Information Division and the total information services of the Foundation. The Information Division provides core information services but the examination of NFER's role in the dissemination of information is not restricted to this Division's work as it is held that a major activity of the Foundation and its publishing arm is the dissemination of information.

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INFORMATION SERVICES. by Jim Davies, Head of Information Division.

Approximately a decade and a half has elapsed since a lengthy article(4) on NFER's information services was published by the Bulletin, although frequent reference to these services have been given in other Bulletin articles, reviews and the like.

During this time a large number of theoretical constructs and practical developments have been thought up, tried out and abandoned or accepted as common practice within the information science and librarianship worlds. It would be both undesirable and impossible to examine all of the theories and practices which have been in vogue at one time or another during this period. Nevertheless it occurs to me that several of these constructs and practices, in short those which seem to have an enduring value, should be instanced and used, almost as 'hat pegs', to hang this article on. It ought to be possible then to get a rough idea of the way in which the NFER's Information Services have developed (or regressed!) over this 15 year period and to show ways in which further developments might take place.

At the outset I would wish to reject a very able contender for one of the "hat peg" roles. I am aware of the present importance and growing significance of 'cost-benefit' and cost-effectiveness analysis' in the information world and have struggled manfully with the literature on these topics. Nevertheless I take Flowerdew and Whitehead's(6) point that "Despite much interesting work, no really satisfactory cost/benefit study has yet been carried out" and Tressel and Brown's(14) argument that much research needs to be done before a valid costing procedure can be laid down for information transfer.

I have therefore selected "networks and networking", the genesis growth and functions of "Information Analysis Centres (IAC)"; the "invisible college" and "the gatekeeper" as points from which the NFER's information services can be viewed. Furthermore I regard these as collateral activities

which taken together give considerable insight into the effectiveness of the operation of any national information centre.

In so far as it is possible to give an objective and factual account of any organisation's information services, I will attempt this before explicitly adopting the above-mentioned perspectives.

It should be noted that I have deliberately titled the article and referred in the text to the Information Services of the Foundation. This is because in a very real way a major activity of the Foundation and its publishing arm is the dissemination of information. Thus all Departments of the NFER and the Publishing Company are disseminating information as part of their everyday activities. Nevertheless, there is a specific Information Division, of which I am head, located in the NFER and many of NFER's core information services are located within this Division. However the co-ordination of all of our information services is undertaken by the Directorate as a key activity both formally through the regular meetings of the Research Policy Group, the Research Division Meetings and the Publishing Company's Management Meetings and informally on an ad hoc basis. For its part the Directorate is responsible in policy matters on research and information activities to the Board of Management which represents administrative and teacher opinion at all levels. Members of the Board being drawn from LEA's and their associations, associations of teachers, inspectors, and education officers, the English and Welsh universities and the armed services. Many polytechnics and colleges of education are in affiliate membership. Thus policy on research and information services provided by the Foundation is under constant review by the ultimate users which must surely be a sound approach.

The Information Division maintains the following sections and project: Editorial Services; Exhibition Office; Press Office; Information Office: Library, and Research Register Project.

NFER Information Services Contd.

The Editorial Services aid the researchers at the Foundation in their aim to produce succinct, comprehensible and timely reports of their research results and preceding activities. In the main, these will be produced by the Publishing Company in book format. The journal of the NFER named, "Educational Research" is edited by the Director and Deputy Director of the Foundation in conjunction with the day to day editorial activities of this service. The journal aims to provide teachers and administrators with clear accounts of pertinent research in current areas of interest, eschewing all unnecessary jargon. The articles in this publication are not limited to NFER contributions, in fact the net is deliberately flung as widely as possible. Although the majority of lengthy external manuscripts, i.e. book-length contributions, submitted to the Foundation for publication are dealt with by the Editorial Office located in the Publishing Company, the Editorial Services have built up a wide range of external contacts over the years and thus where deemed appropriate, specific external manuscript will be dealt with editorially by this service. Educational Research News which is distributed and publicised by the Press Office is written by editorial service staff. Although recently reduced to two issues a year for reasons of economy, this concise publication reaches every State school, LEA, teacher training college, polytechnic etc. in England and Wales. Over 86,000 copies are printed and the publication summarises significant educational research activities at NFER and elsewhere which have taken place in the period since the publication of the last newsletter. The aim here is to capture and hold the attention of the widest audience of practitioners and to relate in straightforward terms the relevance of educational research to their activities. A recent development in Editorial Services is the undertaking of editorial responsibilities for the Journal of Moral Education.

NFER Information Services Contd.

The Exhibition Office provides a fully professional exhibition service on all Foundation activities to appropriate groups in the educational world. The exhibition is available to all members and affiliated institutions for their conferences and courses. It is based on a free-standing, Marler-Hayley multiframe system and is installed and dismantled by exhibition office staff. The exhibition comprises a double sided stand, occupying a centre floor space of 4ft by 20ft. This gives a brief introduction to history, policy, services to members, the current research programme and NFER publishing activities. A display of books and tests for browsing is selected to suit each venue. Substantial quantities of free literature are dispensed from the stand, these include NFER brochures information sheets for current projects, summaries of published reports, Educational Research News and book and test catalogues. The exhibition is on the road for most weeks in the year and demand has always, so far, exceeded available dates. The majority of venues comprise teachers' centres, colleges of education and national educational conferences. An important recent innovation has been the production of a research summary for every major NFER report published. The whole Information Division finds these useful in answering outside queries. Information Sheets for current projects are now being produced in the same format.

NFER Publishing Company and the exhibitions sections are working together to establish permanent book displays at regional centres. The response has been very favourable and most regions will have been installed by early 1977.

The Press Office was until recently staffed by professional journalists. Economic cuts rather than any lack of success on the part of this office has resulted in the Head of the Division assuming personal responsibility for this service in addition to his administrative, coordinating, supervisory and planning roles. Services which were previously offered have been maintained. Thus contact with the Press (National, local and specialist)

and the media (national TV and radio and appropriate local stations) is fostered by issuing appropriate press releases on the publication of any newsworthy article, book or report by the NFER Publishing Company whether or not it stems from NFER research teams. Issuing of Press Releases as appropriate on the appointment of a senior researcher or officer to the NFER team together with advance information of new major projects is a feature of the work here. Press conferences often take place at the time of publication of major NFER research findings. The distribution and publicising of our newsletter 'ERN' is assumed by this office. Review copies are despatched to carefully selected reviewing journals and other specialist publications. Feedback on press office activities is maintained by a press cuttings service operating within the office and supplemented by a national press cuttings agency and a media monitoring service. Appropriate cuttings files are carefully maintained.

Investigations of the feasibility of producing informative publicity films on NFER activities have been examined in conjunction with this office. Economic considerations have unfortunately negated our efforts here. Similarly in conjunction with the Exhibition Office audio visual presentations of our work have been examined in some depth. It should perhaps be noted that an A.V. room is now maintained at the Foundation for the use of research staff.

The Information Office has established itself as a key service within the division. An information science approach is in evidence here. The information officer has adopted the role of intermediary between the literature base in the library and the activities of the research workers and support staff. He offers current awareness services in the shape of current contents lists plus an individualised service akin to but less formalised than the Selective Dissemination of Information (SDI) services widespread in the larger science and technology information services. This current awareness approach is backed up by occasional retrospective search services in depth to aid NFER projects at particular stages of their life [illegible]

at the outset a project may require a considerable retrospective search carried out, unlimited say by language, time or format considerations - this is of course a massive undertaking. Later, requirements will ease and the current awareness services will suffice until possibly the research takes an innovatory turn or other critical developments demand a reassessment of the basic literature. The information office also offers translation facilities and identifies pockets of foreign language expertise within the Foundation for appropriate exploitation as occasion demands. Editing and issuing of Research Information Sheets (RIS) takes place from this office. This activity is supervised by the Deputy Director who heads the Research Division. Taken together, these RIS give a concise yet detailed picture of our current research programme and associated services. Substantial services are offered to our membership. Enquiries demanding knowledge, in depth of the literature are replied to by this office. Thus in the current year, amongst the wide range of inquiries received, those on standards in the basic subjects, illiteracy and pre-school education were particularly prominent. Teaching approaches and 'open plan' organization in schools have attracted growing interest, particularly since the publication of Teaching Styles and Pupil's Progress by Neville Bennett(5). Aspects of planning and organisation in schools commanded increasing attention, notably class size, size of comprehensive schools, rural schools, mixed-ability teaching and guidance at secondary level. The effects of early or late admission to primary schools and problems relating to transition between school and levels of schooling were frequent topics of inquiry. Considerable interest was also shown in immigrant education, truancy and disruptive pupils, disadvantaged and handicapped pupils, parental involvement and parent-teacher relations. The total number of inquiries is estimated to have been at least 2,800 for the current year with well over half of these coming from external sources. This is not to suggest that the NFER's information officer handled all of the

literature based queries by himself or even that all of these demanding knowledge in depth of the literature were handled exclusively by him. Clearly this would be a physical impossibility. However it is true to say that a substantial number of these inquiries were dealt with either directly by or in conjunction with this office. In fact, the handling of inquiries has involved close collaboration between the Head of Information, the Sections under him and other Divisions of NFER. Editorial Services give valuable assistance to Information Division in answering inquiries concerning the Foundation's publications. Acknowledgement should be made too of the unique contribution made by the specialist information and advice provided directly by NFER projects on topics within their areas of activity. Mention should be made of the analytical aspects of the work of the information office. Annotation, selective listing, abstracting, summarising and the compilation of brief reviews are often undertaken albeit mostly unpublished.

Within the library, requests for information from researchers, teachers, students and the public have been dealt with by telephone and letter. Here the emphasis is of course on those queries requiring considerable bibliographic skills to process.

The library contains 13,000 books, 300 periodicals and about 300 current educational and psychological tests. A professionally qualified staff is available to assist members with their enquiries and to help them to make maximum use of the collection. Loan and photocopying facilities are available to members (and to non-members at the discretion of the Librarian). Facilities for the use of microforms are also available. The Library has been essentially conceived of as a working collection, meeting the immediate needs of the NFER clientele and such queries from members as we can, within reason, be expected to answer directly from our own resources. Links with specialised and larger library services have been

established in order to supplement our information and literature supply facilities.

A research project is maintained within the Division. This was initially a feasibility study designed to explore the possibility of producing a comprehensive register of on-going educational research in the United Kingdom. The study began in Spetember 1973 and the first and second phases of the project were completed in September 1976. Funded by the DES and the SSRC, the aim of the project was to produce a complete register of research covering the years of the projects life. The venture had many experimental features such as the ability of one centre to bring together such information which previously existed in a bewildering variety of sources and formats, making very great efforts necessary to obtain an in-depth view of the field; the highly speculative nature of publishing this as a commercial venture; the internal arrangement, including the experimental use of the UK version of the EUDISED thesaurus for subject indexing purposes; the use of British Library computerization as an intermediary in the production process; the involvement of a steering committee, representing user interests, at an appropriate phase of the programme.

Over 2000 projects from some 280 institutions were recorded and fully indexed using the thesaurus classification which was the English contribution to the European Documentation and Information Service in Education (EUDISED) of the Council of Europe.

It is noteworthy that each week half a dozen and more inquiries are being satisfied by using the data in the register and it is foreseen that when complete and regularly updated this service can be considerably extended.

Publication of the register is scheduled for November 1976 and phase III has now been funded to produce two further separate registers. Although it is held that Phase III will be less experimental in approach than previous phases, i.e. there will be increased emphasis on the routinisation of production, there are still many experimental features of the work. For instance it will not be possible to assess whether volume one of the register is

acceptable until some time has elapsed after publication date. Supplementary questions about the index, internal arrangement, type size, the need to computerize, linkage with completed registers of research, alternative outputs etc. must all be examined during phase III.

The Research Division obtains monies from sponsoring bodies for carrying out commissioned research. Monies obtained serve not only to broaden the range of research activities but also, since they involve a substantial contribution to overhead costs, to sustain those sections of the Foundation on which the services, including Information Division Services, largely depend. Commissioned projects have to be earned and sponsors offer grants only to those who can be relied upon to carry out competent and effective research and administer the funds entrusted to them efficiently and responsibly. Thus it can be seen that Information Division services are only maintained at their present scale by dint of the hard work and expertise of our colleagues in the Research and Administrative Divisions coupled with the profits obtained from the work of our colleagues at the Publishing Company.

NFER Information services outside the Information Division

The research teams It can be said of our current research activities that no major stage or aspect of the educational system is being wholly neglected. We have an array of inquiries into educational provision at the pre-school level, investigations concerned with primary, secondary and further education and with the education of teachers. We are addressing our attention to the curriculum, to examinations and to features of school organisation and methods of teaching. We are concerned with children of different levels of ability, with handicapped pupils and students and children drawn from a variety of ethnic groups. The researchers are encouraged to regard themselves as 'ambassadors' of the Foundation and

wherever they find themselves in the course of their research, be it in the classroom, addressing groups of teachers, talking to HMIs or LEA administrators they attempt to foster the relationship with NFER on both a formal and informal basis. Publicity literature, newsletters, catalogues and the like are readily available for them to distribute as they see fit. At the outset of a new project and at appropriate intervals during its life, workshops and meetings are held between researchers and groups concerned with that area of research activity. These meetings, often of course between teachers and researchers, may take place at the Mere or in any appropriate location in England and Wales. The dialogue which takes place may very well lead to a modification of the proposed research activities to highlight the true problem areas in that research field. Having established contact with relevant groups the projects may well issue occasional newsletters concerned with strictly project activities to the groups in question. Wherever information of general interest is generated this would be taken up by Information Division for appropriate dissemination. Published research reviews and bibliographies sometimes arise directly from the project work. Naturally any intermediate reports issued by the projects would have received the advice of the Editorial Services of the Information Division as would, of course, final reports on project activities. Visitors to the Foundation can be accommodated by researchers, who frequently have a heavy work load, only if the potential visitor has sufficient expertise to enable the visit to be of reciprocal benefit. (General visitors to the Foundation have their programmes arranged by the Head of the Information Division). During the current year 4 overseas conferences and 26 conferences in this country were attended by researchers, and other members of staff. One hundred and thirty two lectures were given, 25 articles and eleven books were published and fifteen broadcasts were made.

NFER Information Services Contd.

Traditionally, the Guidance and Assessment Services have been engaged in educational test standardization and the rendering of advice to test users and other enquirers. Since early 1976, test sales and the advisory service relating to testing has been shared by the NFER Publishing Company and G.A.S. This has enabled more emphasis to be placed on the development of new tests and other types of assessment material. Interaction with schools and the consequent dissemination of information has not ceased as staff have visited a considerable number of schools to discuss methods of assessment and occasionally to give detailed statistical help in the interpretation of test results.

The NFER Publishing Company comprises separate Test and Publications Departments with a Commercial Department servicing the sales and allied functions.

The Test Department is responsible for considerable technical advice and information on testing matters, undertakes research into very different areas of testing and its members have authored a number of test manuals, papers and books, and developed British editions of various overseas instruments.

The "Catalogue of Psychological Tests and Clinical Procedures" is available from the Company which acts as sole British agent for many of the major American test producing organisations. The tests include measures of aptitude, ability, intelligence, personality, interest, attitude and achievement and are available to suitably qualified persons in the educational clinical and industrial fields. As mentioned above, the Test Department has now been expanded further by absorbing the publishing, sales, some of the advisory and some of the research functions of the Foundation's unit previously known as the Guidance and Assessment Services, thus combining all the test and other publishing business of the NFER under one roof. A new catalogue is available from the Company entitled

"A Catalogue of Tests for Educational Guidance and Assessment." Lecturing has become an increasingly important aspect of the Department's advisory function - both in the educational and occupational spheres - together with the running of training courses. Demand for such services continues to expand.

The Publications Department

The "Book Department", as it then was, of the Publishing Company became effective in October 1972 and within the space of four years, the book list being handled by NFER Publishing group has grown rapidly with the result that the impact being made on educational reading, study and perhaps practice has reached "significant proportions". Obviously in today's economic climate, the educational themes manifested in the manuscripts must be important, otherwise they would not sell. But there is an additional feature of these manuscripts which has helped them into print. The books tend to be concerned with practical matters, to relate to the classrooms and what goes on there. When the book is the product of a report of an educational research project, it tends to be presented in a style which, without being "popular" is likely to be helpful to practising teachers who may not have concrete and first-hand experience of the variety of research techniques used within educational styles.

Leslie Smith(13) states that "I find this new approach to publishing research reports immensely helpful irrespective of the themes they speak to: but when the themes upon which the research has been based relate in a most pertinent fashion to the classroom situation I know so well, I can only use superlatives to express my appreciation.

The NFER Publishing Company's list of books, largely created within the brief span of the four past years, illustrates the fact that the highly commendable features to which I have referred are very much in evidence; and this in turn points to the existence of a policy within the NFER's operations which is concerned with the processes of dissemination

not only of the findings of relevant educational research but also of any number of interesting facets of educational practice. The impact of this policy at work is indeed impressive.

How have they managed to achieve this high standard of publishing? Firstly, NFER Publishing Co have made a conscious effort to broaden the basis of their publishing programmes, and to achieve this they have created links with the National Children's Bureau, the Social Science Research Council, the Institute of Education at the University of London, and the Council of Europe each of which possesses the potential and record of producing materia. which the NFER Publishing Company can handle, and, of course, the Company also has the NFER's own output to deal with. Secondly, the NFER Publishing Company has accepted the responsibility of providing a broader back-up facility for schools, and this is reflected in the relevance of the material selected (and offered) for publication as far as teachers are concerned. Both of these developments can be only to the advantage of educational practice". It only remains to be added that manuscripts of educational relevance submitted by any individual will be seriously considered for possible publications.

One of our prime objectives has been and will continue to be to ensure, as far as possible, that the researches we undertake and the other activities we pursue are relevant to the needs and interests of our Members. We continue to seek out means of establishing regular contact with administrators, teachers and others who can help us to achieve this aim. As stated, the staff of the NFER regularly visit schools and teachers' centres during the course of their work and attend conferences at which educators and educationists foregather. We have organized meetings at the Foundation for the H.M.I. and of local authority inspectors and advisors and directors of educational research activities in polytechnics.

A further step taken in 1974 is one to which we attach considerable importance. The NFER invited each local education authority to nominate

an individual who would be prepared to act as liaison officer between the Foundation and its member interests in the area. Almost all the authorities responded to this invitation many of them enthusiastically. It was hoped that it would be possible to foster close and regular contact with these individuals and that our members would use them as channels of communication so that we are kept fully aware of their views on the kinds of service that we can most usefully perform on their behalf. This hope was fully realized and we have embarked on a series of conferences with the liaison officers organized on a regional basis, at which they and members of the staff of the Foundation have discussed all aspects of NFER's research activities and services.

Having completed the factual overview of NFER's information activities, I would now like to review these in the light of the aforementioned perspectives: "networks and networking"; "Information Analysis Centres", "the invisible college" and "the gate-keeper" to see how the dissemination services measure up against these developments.

Networks and Networking I will base my conception of networks and networking on those of Miller and Tighe(11) who state . . . "as network-like activities proliferate, precision in the use of the term declines. 'Network' appears to be the 'in' word of the moment, somehow appearing to be the panacea for all discourses of library and information systems . . . In parlance recognizable to librarians, the term has been defined by Greenburger and Aronotsky(8) as a 'mode . . . for sharing resources and linking otherwise incompatible procedures and formats of different systems and organizations' . . . . the authors are attracted to a reasonably general working definition such as that espoused by Greenberger et al, who limit their discussion of networks to those resource-sharing activities that employ computer and communication techniques, and to arrangements among several separate and independent institutions, and to the definition by Becker(3) who describes library and information networks as having 'inter-

dependent, rather than independent organization . . . intermembral, rather than individual decision-making, and . . . extrajurisdictional responsibility rather than only local ones.'

In general, the following characteristics of networks have guided the authors . . . .: a network must 1) have a communications component and operate through a communications technology (e.g. telephone lines, cable, microwave, radiowaves) rather than face-to-face; 2) have a set of protocols, or procedures to which users must conform to effect communications; and 3. have fairly clearly defined service goals to which managers subscribe and that are describable to users . . . practitioners are not at all consistent in distinguishing between library networks and information networks . . the view propounded by the authors is that library networks are a subset of information networks, in that library networks are used to transmit a particular kind of information by librarians."

Although it could be argued that the Information Division's Press Office, Exhibition Office, Editorial Services, and Information Office are components of various networks, it seems to me that a fairly rigorous application of the above definitions and criteria exclude activities in these sections, similarly and despite its concern with "the literature", I would exclude Publishing Company's dissemination activities from this immediate discussion.

The library and the DES/SSRC project remain.

The library operates a small working collection and as such must be linked with local, national and specialised backing services in order to maintain an adequate literature supply and information service. The significant networks are the inter loan/photocopy microfiche backing services offered by the BLLD and the deposit of nationally useful materials at BLLD after they have served their period of use at NFER. The library also takes part in the network operated by the Libraries in Institutes and Schools of Education (LISE). The libraries of universities colleges, research organizations such

as the National Children's Bureau, public and commercial/industrial libraries are also participants in the network that has been established. Libraries in other countries are also used and make use of the NFER's information/library service.

The research project was initially designed to explore the possibility of producing a comprehensive register of on-going educational research in the United Kingdom and, continuing with a production phase designed to produce further annual registers coupled with additional research features, seems to be the most important networking venture that NFER is engaged in.

Although the above mentioned summary of this project concentrated on the national function of this venture, it has been seen from the outset as a component within the Council of Europe's European Documentation and Information System in Education (EUDISED) Network.

Humby(9) has succinctly summarised the Eudised operation: "Eudised had its origins in a survey of the educational documentation and information system in Europe carried out by the Documentation Centre for Education in Europe in 1967 . . . Following this report, a meeting was held in Strasbourg in September 1968 of experts from member states of the Council of Europe in which experiments in the application of computer techniques to educational documentation were under way. The report of this meeting was submitted to the Council of Cultural Cooperation of the Council of Europe in September 1968 and the Council then set up a working party on the application of computer techniques to educational documentation and information. The working party's report was considered by the Council's Committee for Educational Documentation and Information, which proposed the establishment of a Steering Group for Eudised. . . As a result of the report, two working parties were set up by the Committee for Educational Documentation and Information in April 1972. The first was concerned with preparing an agreement on the format and standards for Eudised, the second with elaborating

the Eudised Multilingual thesaurus. Their work was completed by the end of 1973 resulting in the publication of Eudised standards, format, character representation and Eudised Multilingual thesaurus. Further technical studies were published in 1974.

By the spring of 1974 the preparatory stage of the project had been completed and it began its operational phase on an experimental basis in the field of educational research and development. This involved the collection of information on research in progress and completed and on national pilot projects of educational reform in various member countries and the publication of computer printouts containing abstracts of the projects."

(For a more detailed account see MacGregor(10).)

As stated, cooperation with the EUDISED network was seen to be of the utmost importance from the outset of the Research Register Project. This led us to the use and modification of the British contribution to the EUDISED thesaurus in the subject indexing of the research records. It was a major factor in the decision to computerise the data base and the subsequent involvement of the British Library's Bibliographic Services in this computerization. The overall aim was to establish this project as a nodal point within the European network known as EUDISED.

It was seen that all significant information on educational research being conducted in the United Kingdom would thus be recorded on computer. It was understood that similar action would be undertaken by other European nations and that the coordination of these activities by the Council of Europe's EUDISED programme would enable these computer stores to be made compatible, with data being readily exchangeable, leading to ultimate transfer and exploitation of the total information in appropriate formats for the common good. National nodal points within this computerised network were established and as a common language of transfer was not deemed appropriate, a sophisticated multilingual thesaurus was developed. Compatibility of software and hardware

was sought, the Bibliographic Services of the British Library being substantially involved in the attempt to achieve conformity of computerization.

Suffice it to say that despite some hitches in the EUDISED programme, much has been achieved and the NFER for its part has available, in addition to publishing this register, a computer tape, holding complete data for the years 1973-76 in conformity with EUDISED's stipulations. Thus the NFER can be seen to have established a national role within this international network. NFER is the data-capturing unit for the U.K.. The British Library's Bibliographic services have offered the necessary help on computerization and the Council of Europe is coordinating our own and similar activities throughout Europe.

The governments of the 9 countries of the European Community, as distinct from the Council of Europe, have decided to create a European network (EURONET) for scientific, technical, social, economic and legal information and have spent 1.8 million dollars in 1975 are spending 2 million dollars this year and are firmly committed to spend 2 million dollars next year also. Further the Council of the Commission of European Communities has established CIDST - The Committee for Information and Documentation in Science and Technology, to assist in the planning and implementation of the European network of documentation and information services.

It would not appear unreasonable to hope for some linkage between EUDISED and EURONET at a fairly early date.

The Information Analysis Centre (IAC)

The link between the computer-based networks exemplified by EUDISED and the IAC was appreciated by Alan Rees(12) when he pointed out that "the information problem long considered from the point of view of inadequacy in retrieval must now be viewed in terms of poor utilization. The accomplishment of technical, social and economic goals necessitates more extensive and sophisticated selection, compacting, integration, synthesis

and packaging of the literature . . . information rejection in many cases is to be preferred to information retrieval. The 'garbage can theory of information handling' which postulated that more and more information was preferrable to less and less thereby justifying the use of high speed computers to sift through mountains of garbage to find an appropriate diamond, no longer prevails . . ."

Having established our network, what do we do with the mountain of information it generates?

The Weinberg report(15) states "The activities of the most successful information analysis centers are an intrinsic part of science and technology. The centers not only disseminate and retrieve information, they create new information . . . . The process of sifting through large masses of data often leads to new generalizations . . . In short, knowledgeable scientific interpreters who can collect relevant data, review a field and distill information in a manner that goes to the heart of a technical situation are more help to the overburdened specialist than a mere pile of relevant documents. Such knowledgeable scientific middlemen who themselves contribute to science are the backbone of the IAC's, they make an information center a technical institute rather than a technical library."

Gray and Perry(7) note that many such centres have been created in the U.S. Government agencies, notably in research institutes of the Department of Defence and the Atomic Energy Commission. Apart from the Weinberg report, an equally favourable prognosis by a committee of the National Academy of Sciences and the National Academy of Engineering created a recent renewal of interest. The U.S.President's Committee on Scientific and Technical Information (COSATI) issued in 1970 a list of federally supported centres. Almost all of them serve what the Americans call 'mission-orientated' research and are located in Government agencies or contracting bodies e.g., Thermophysical Properties Research Center of Purdue University and the Defense Metal Information Center at Battelle. Some of the American centres are large

employing sophisticated computer systems and up to 50 full-time professional staff. They are expensive to create and maintain and it is doubtful whether any of them are fully self-supporting. But the best provide a wide range of critical services at a high standard.

Does the NFER in any way measure up to the IAC concept?

As we have seen, cooperative activities and networking devices allow for a substantial literature base to be provided. Is this merely "a mountain of garbage without even an appropriate diamond waiting to be uncovered?

A major development in NFER's information activities of late has been the recognition that the literature must be analysed and evaluated if a good service is to be offered. Thus researchers of standing within and outside the Foundation have been asked to look at problem areas within their fields of activity, to review the research literature (and here Information Division's Library and Information office have been of fundamental service) and to critically evaluate its content highlighting the best and most promising approaches and by inference, if not outright condemnation, relegating the less significant and ill-devised research to oblivion. A number of key publications have already been produced or are about to be: Intervening in disadvantage: a challenge for nursery education by M.Woodhead; Sixteen to nineteen: a critical review of the current educational provision by J.Dean and B.Choppin; Language needs of minority group children and The child's acquisition of language, both by J. Derrick. Language reading policies for low-performing children by Caroline Moseley.

Couple this with our research reports which often have an evaluatory element, published annotated bibliographies compiled by information staff and subject specialists; unpublished bibliographies from the Library and our internally produced SDI and current awareness services together with substantial retrospective searching abilities and I feel that we do indeed have a large and growing IAC component in our total information [illegible]

The "Invisible College" is a group of scientists, usually less than 100 strong who know each other and share information directly. It has had elite connotations but probably every scientist has his invisible college in a functional sense. The invisible college "selects its own society, then shuts the door". Members of an invisible college would correspond with each other, arrange meetings in distant centres, plan joint projects and co-author books as well as saving papers/reports by other members of the I.C.

For the past decade or so, the most prevalent concept in the study of informal information exchanges amongst scientists and technologists has been the 'invisible college'.

No doubt a valuable, if costly, study could be made of the invisible colleges which function in and extend through and around the NFER. Given their crucial importance in the flow of information, it is probably more to the point to ask whether invisible colleges are fostered or impeded by the NFER. It seems to me that every opportunity is given to encourage the development of the I.C. Not only in membership of professional association fostered, but NFER staff from the directorate downwards have played substantial parts in establishing and maintaining such organisations as BERA (the British Education Research Association) and ASRO (the Association of Social Research Organisations) which separately act as forums and contact points for invisible college members. Researchers will naturally have membership of distinct invisible colleges according to their interests, but substantial attempts are made to encourage links between NFER researchers by running courses, maintaining committees, holding meetings and providing facilities for informal chats over coffee and meals. In fostering contact between the inspectorate, the colleges of education, polytechnics and teachers, both at the outset of a research project and at appropriate moments during a project's life, the NFER is clearly giving every opportunity to researchers and others to join in appropriate invisible colleges.

The Gatekeeper. Scientists, perhaps as much as any other group, prefer to seek information by simple, straightforward methods such as talking, scanning and browsing. Where a member of a research team is made responsible for seeking information systematically, as often as not he is a research student or junior member of the paid staff. Recent studies among research and development teams have shown that whether or not such a formal responsibility is assigned, the flow of information to and within teams relies greatly on informal communications and personal contact and especially on what are called 'gatekeepers': individuals with the desire and ability to secure information and circulate it to interested colleagues.

Important research in this area has been conducted by Tom Allen(1), (2) and a team of researchers working from MIT. They found that in a given working unit there are identifiable communication "stars". These persons, compared with their colleagues tend to use external information sources much more frequently, communicate more frequently with others in the same office or department (in terms of relative frequencies of communication 'to' and 'from') and to form a closer communication network amongst themselves. A conceptual deduction from such data is that these communication "stars" serve as the gatekeepers who facilitate the flow of information from outside and transmit the information to their colleagues. The implication of this deduction is that the transfer of technical information depends on the communication stars.

Does NFER attempt to identify and foster such people. Again I think that the answer here is in the affirmative.

Links with teacher centre leaders are established both on a national and local level and many information services, including exhibitions in particular, are geared tothe needs of teachers centre leaders and their teacher clientele.

Possibly the major attempt to identify such communication stars however has been through

the Local Education Authorities. This is detailed above. Our publicity materials such as the Annual Report and our periodic newsletter (ERN) have publicised and pinpointed these officers in order to boost teachers links with NFER via their Local Education Authority.

Implicit in the gatekeeper concept is the "referral function": the routing of queries to appropriate personnel. This is an important function shared by all informed personnel both within NFER and the Publishing Company and by those linked with it as liaison officers or teachers centre leaders. Within my own Division, for instance most sections and the project offer such a service. This may not make my staff "communication stars" but it does show that they partake in the gatekeeping role.

Clearly much remains to be done but it would surely not be wrong to say in summary that developments and concepts like networking, IAC's, the invisible college and the gatekeeper have established themselves within the overall information services of the NFER.

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